



NOAA's National Ocean Service

Center for Operational Oceanographic Products and Services

Observations, Products and Data Access

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What is CO-OPS?

Our Mission: Meaningful oceanographic data for the Nation

CO-OPS is the *authoritative source* for accurate, reliable, and timely tides, water levels, currents, and other oceanographic information.

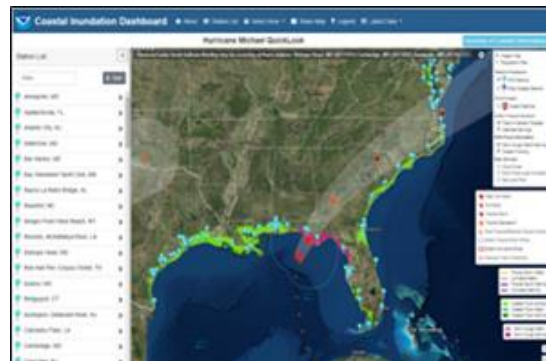
Vision

Supporting the Nation's economy and safeguarding coastal communities with oceanographic information accessible by anyone, at any time, from any place.



Supporting

- Mapping and charting for the nation
- Safe and efficient navigation
- Coastal resilience and planning

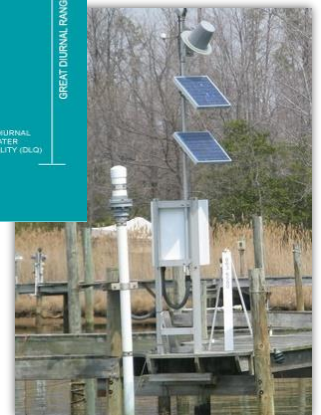
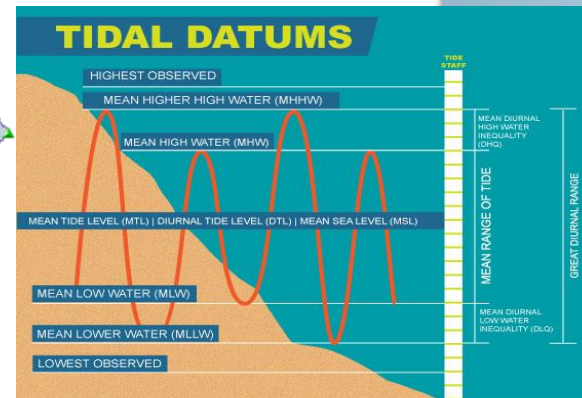




Water Level Observations

National Water Level Observation Network (NWLON)

- Real-time Water Levels
- Meteorological/physical oceanographic data
- Long- and short-term stations
- Tide predictions
- Tidal and Great Lakes datums
- Sea Level trends

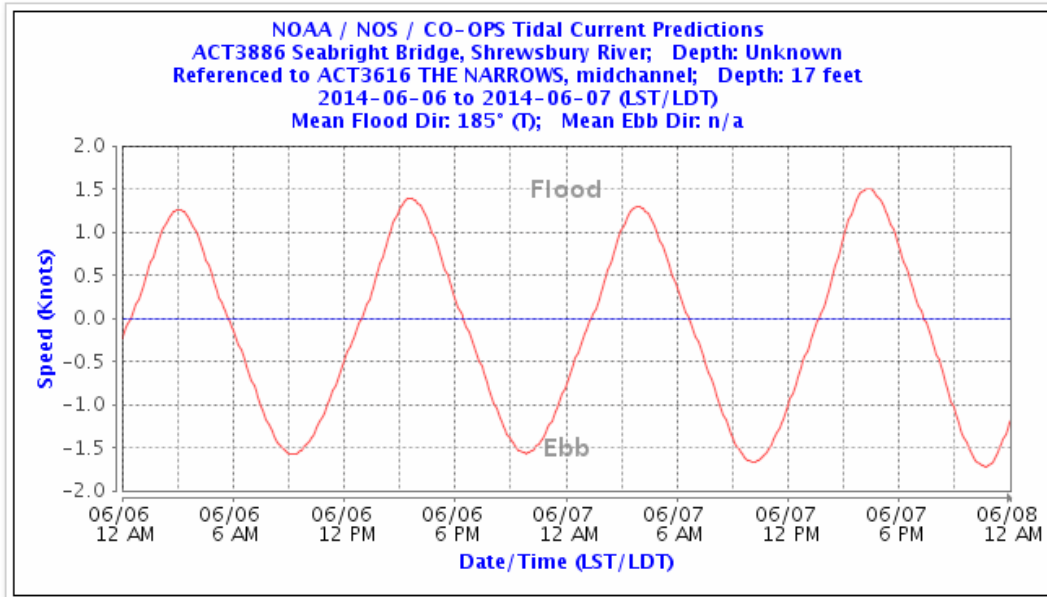




Current Observations

National Current Observation Program

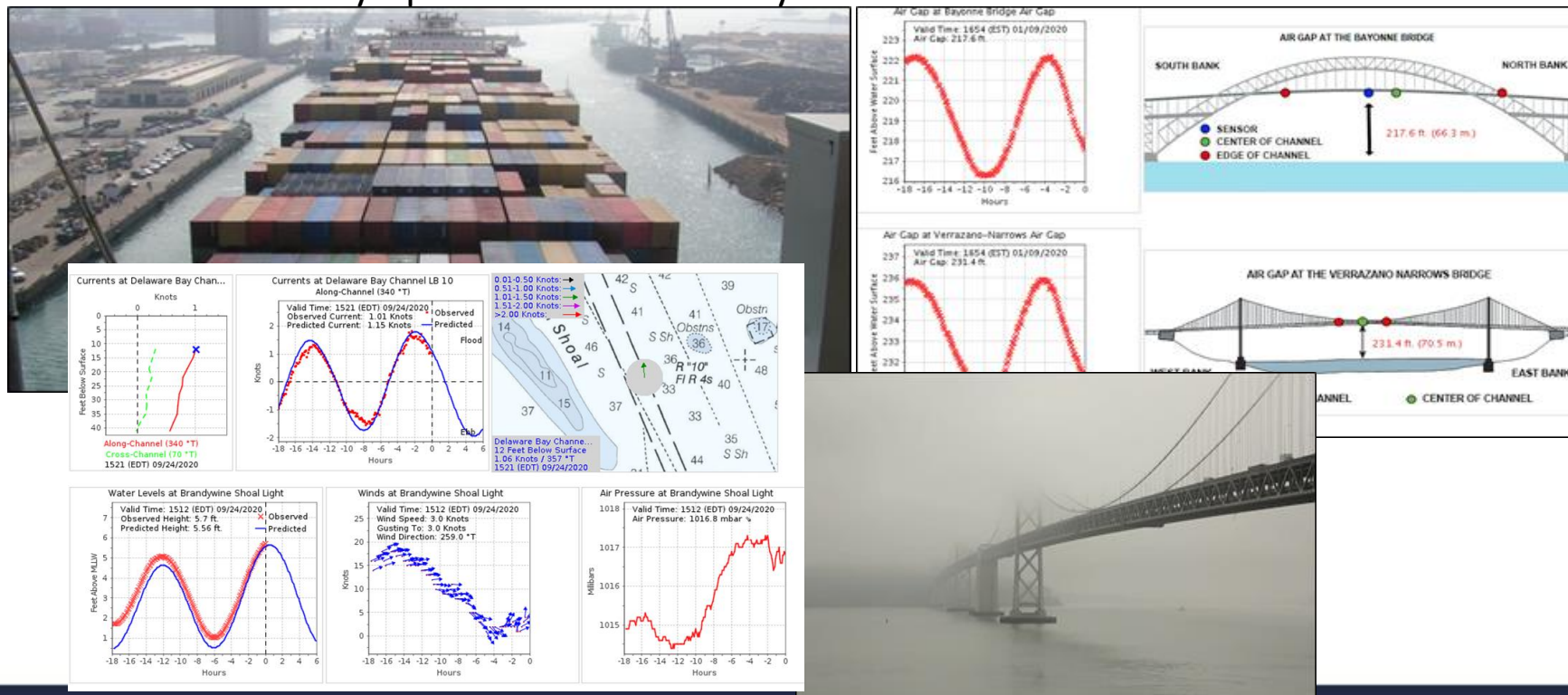
- Collect, analyze, and distribute current observations and predictions
- Generate products and information to maintain and update the Nation's Tidal Current Predictions





Physical Oceanographic Real Time System (PORTS®)

- First established in 1991
- Shared responsibility partnership
- Focuses on real-time observations, collected and disseminated in a variety of ways
- **Water levels, currents, winds, temperature, visibility, salinity and bridge air gap**
- Systems are tailored to the needs of local mariners
- PORTS® currently operates in various bays and harbors in the U.S.





PORTS Locations

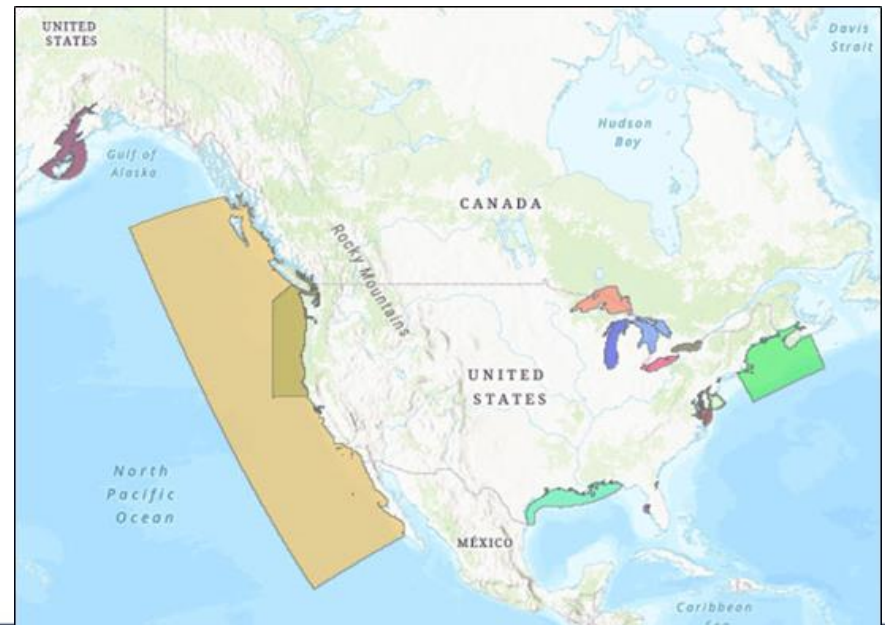
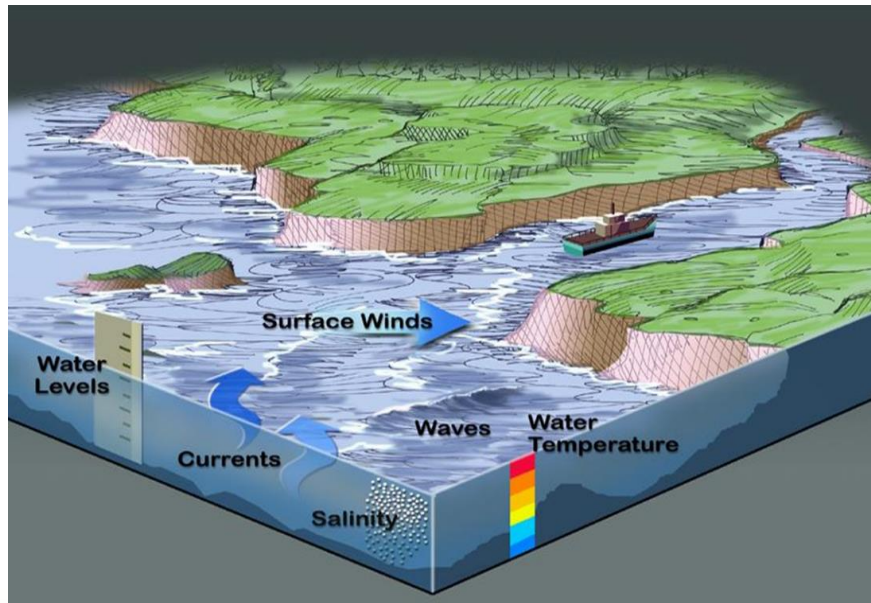


- Currently there are 35 PORTS® covering 79 major seaports
 - King's Bay and Portsmouth just became operational in August 2020.
- Over 200 real time stations
- Proven reductions (~ 50 %) in allisions, collisions, groundings and oil spills in areas served by PORTS®



Coastal modeling

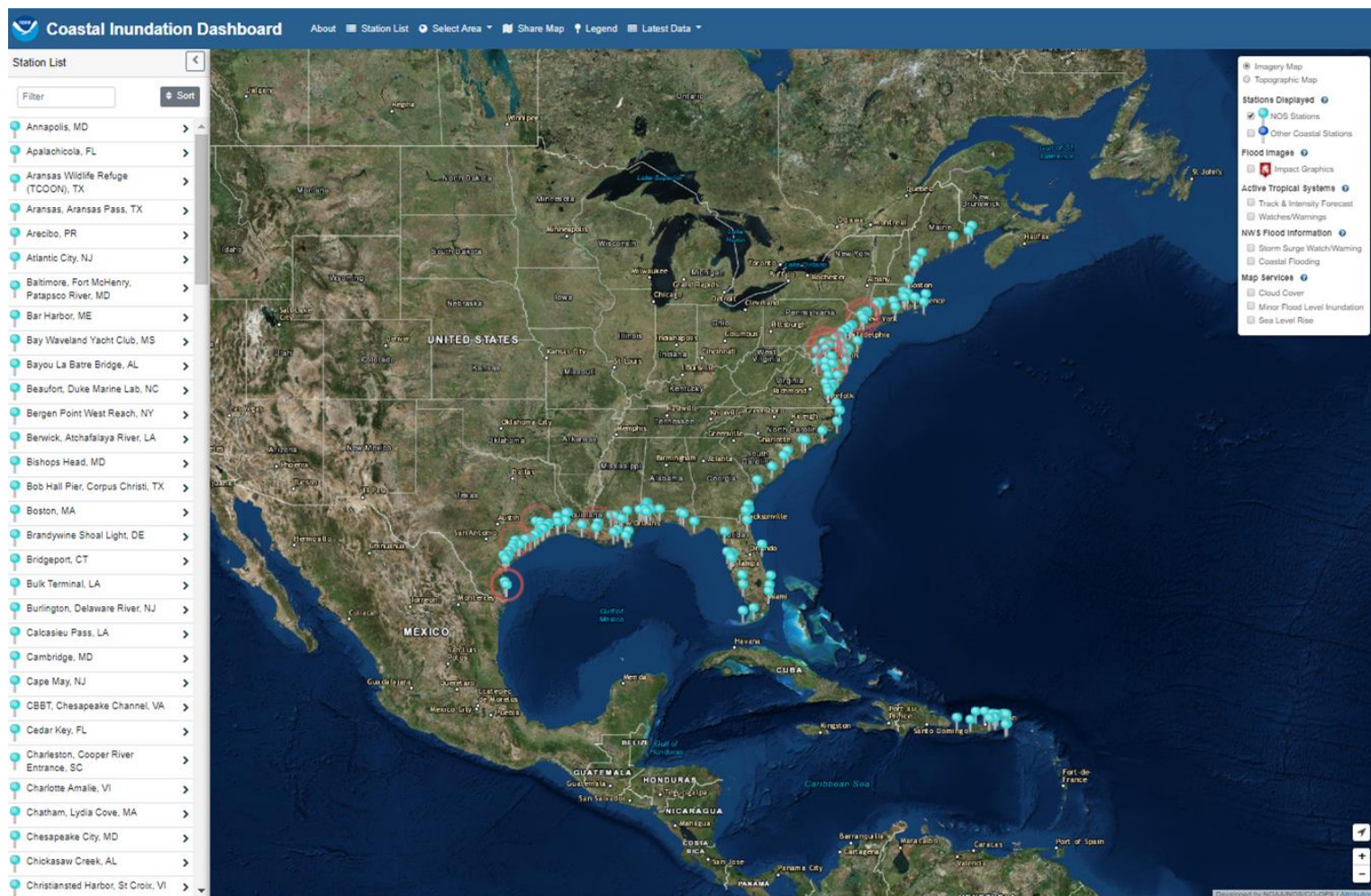
- **Operational Forecast System (OFS):**
 - Consists of automated integration of observed data, hydrodynamic model predictions, product dissemination & continuous quality-control monitoring
- Time Series Plots (24 hour nowcast and 48-72 forecast) of water levels, currents, temperature, salinity, and surface winds
- 14 Operational Forecast Systems (OFS)
- OFS part of larger National Ocean Service Coastal Ocean Modeling suite
- Invaluable data accessible by the maritime community
- More OFS upgrades/expansions planned over the next five years





Products

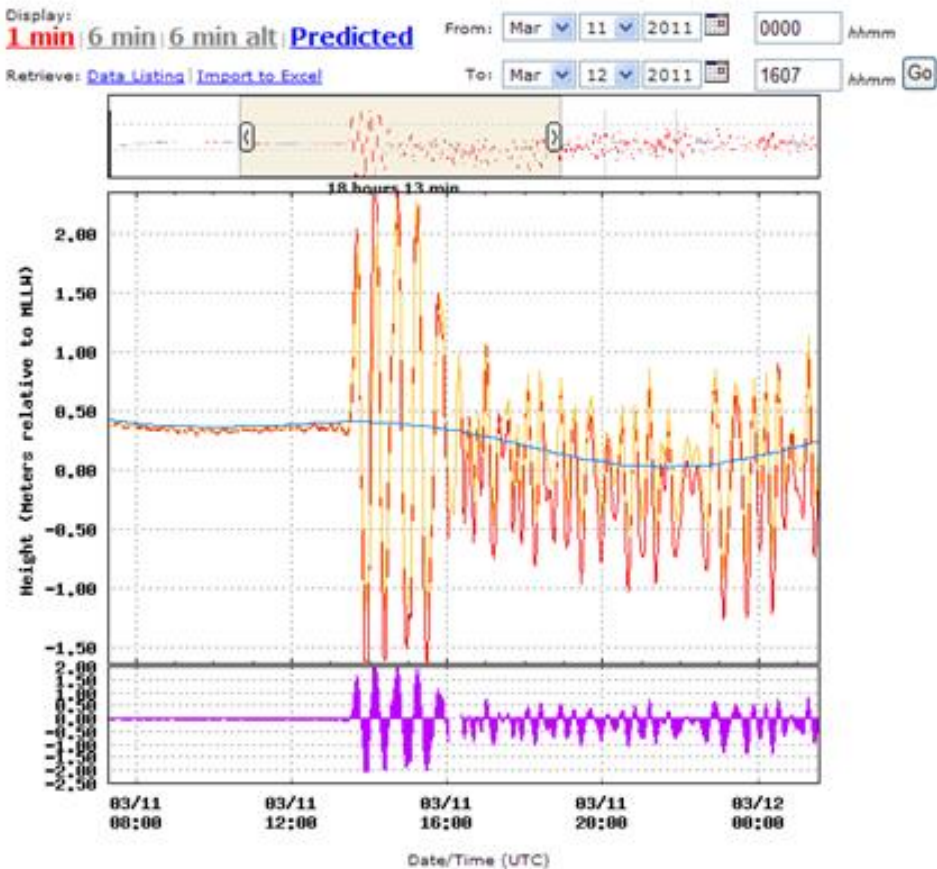
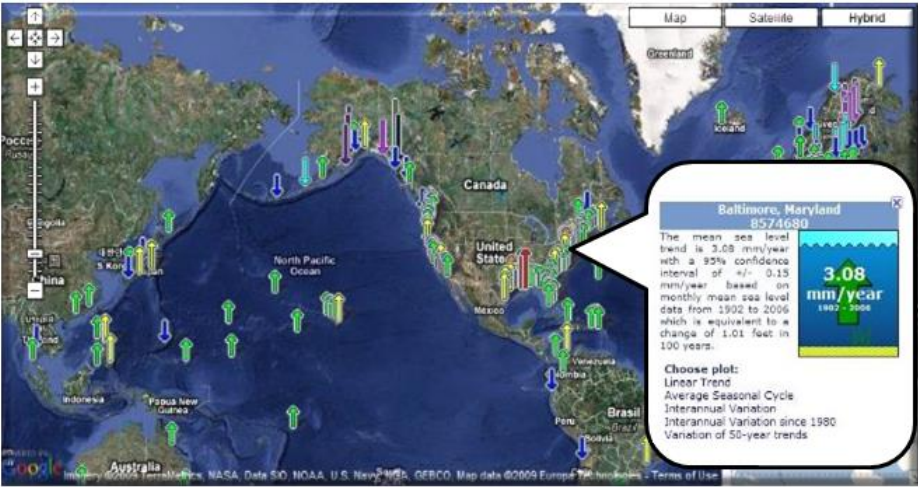
Coastal Inundation Dashboard





Products

Sea Level Trends Tsunami Warning



Hint: Click and drag the tan slider or the plot

Center for Operational Oceanographic Products and Services (CO-OPS)
Water levels for 1615680 - Kahului, Kahului Harbor
From 03/11/2011 00:00 through 03/12/2011 16:07
Disseminating sensor: A1 | Alternate sensor: B1 | Datum: MLLW

These raw data have not been subjected to the National Ocean Service's quality control or quality assurance procedures and do not meet the criteria and standards of official National Ocean Service data. They are released for limited public use as preliminary data to be used only with appropriate caution.



Center for Operational Oceanographic Products and Services (CO-OPS)



Products

Tidal Datums Calculator

Datum Calculator Input Parameters

Select a Water Level Data File to Upload

No file

Browse...

Upload File

— Supported file format is comma separated value (.csv). Layout of each line: datetime(mm/dd/yyyy HH:mm), water level

— Any consistent time sampling (1-minute, 6-minute, 15-minute, etc.)

Time Zone

GMT

— Time zone should be consistent with uploaded file

Data Units

Meters

Coordinates of Your Station

Lat

Latitude

Lon

Longitude

Go

Select Control Station

— Please enter the latitude (-90.0 to 90.0) & longitude (-180.0 to 180.0) in decimal degree above, and click Go to enable the Control Station dropdown

— If you choose a control station, tidal datums are computed by simultaneously comparing to the control station

Interactive Map to Locate Control Stations

Calculate Datums



Data Services

Featured Services

CO-OPS API Builder	API	<ul style="list-style-type: none">• Navigate, build, and submit URLs to query station listings, observations, predictions and derived products using various CO-OPS APIs (Data API, Metadata API and Derived Product API)• Output format: XML, JSON, dependant on selected API
	Application	
	Data Retrieval	
CO-OPS Data API	API	<ul style="list-style-type: none">• Documentation helping users retrieve past and present observations and predictions from CO-OPS Stations• Retrieves data from products unique to a specific station including water level, visibility, air temperature, predictions, datums, and more• Output format: CSV, XML, JSON
	Webpage	
CO-OPS Metadata API (MDAPI)	API	<ul style="list-style-type: none">• Documentation helping users retrieve associated metadata from CO-OPS stations• Retrieves data such as station location, datums, harmonic constituents, built-in sensors, tide predictions, flood levels and other station details• Output format: XML, JSON
	Webpage	
CO-OPS Derived Product API (DPAPI)	API	<ul style="list-style-type: none">• Documentation helping users retrieve information about CO-OPS' derived products• Products included are top ten water levels, yearly inundation statistics, extreme water levels, and sea level trends• Output format: XML, JSON
	Webpage	
GIS Data Portal	Webpage	<ul style="list-style-type: none">• Provides public access to CO-OPS stations and derived data products in the form of GIS (Geographic Information Systems) services• Output format: Shapefiles, WMS, WFS, JSON, KML



Data Services

Other Services

THREDDS	Server	<ul style="list-style-type: none">Thematic Real-time Environmental Distributed Data Services (THREDDS) allows users to access and download data sets such as NetCDF Operational Forecast System (OFS) data and its sub-samples in ASCII and Binary formats through OPeNDAP protocolOutput format: NetCDF, ASCII, and other formats
Amazon Web Services	Data Retrieval	<ul style="list-style-type: none">Access Operational Forecast System Data on Amazon Web Services (AWS) stored in an Amazon S3 bucket.Output format: NetCDFRetrieval methods: Panoply, ncdump, and other tools are also available.
	Webpage	
ERDDAP	Application	<ul style="list-style-type: none">Environmental Research Division's Data Access Program (ERDAPP) allows users to make graphs, maps, and download subsets of scientific datasetsProvides Data Access Forms (webpages) which help users create open-source project for OPeNDAP (<i>open-source project for a network data access protocol</i>) compliant requestOutput format: HTML, CSV, json, NetCDF, etc.
	Data Retrieval	
	Server	
SOAP Web Services	Data Retrieval	<ul style="list-style-type: none">Offers different SOAP (Simple Object Access Protocol) web services that contains sample requests, sample responses and sample Java Client codeUsers can seamlessly connect to the services and to retrieve the data of interest.Output format: XML, HTML, TXT
	Webpage	



Data Services

Other Services

Stations Listing	Application	<ul style="list-style-type: none">Retrieves a list of active National Water Level Observation Network (NWLON) stationsProvides viewable and downloadable station metadata, listing sensors and data in real-timeOutput format: XML, HTML, TXT
	Webpage	
SOS	Application	<ul style="list-style-type: none">Provides data retrieval of the latest observations, time series, and historical data in multiple data formats. Data can be requested for a single station and for a "collection" of stationsOutput format: CSV, TSV, XML and KML
	Data Retrieval	
Google Earth/KML Files	Webpage	<ul style="list-style-type: none">Access our data via KML
NowCOAST	Webpage	<ul style="list-style-type: none">A web mapping portal providing spatially referenced links to real-time coastal observations and NOAA forecasts of interest to the marine community



QUESTIONS?

For more information:

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